Relationships between industrial metal exposure and oxidative status in an insectivorous bat

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Exposure to heavy metal elements from industrial sources can have negative consequences on ecosystems. Particularly, long-lived animals may be vulnerable to the effects of low but prolonged metal exposure because accumulation of toxicants interferes with important physiological functions e.g. mineral deposition in bones, micronutrient gastrointestinal absorption and nervous system development. Bats can accumulate metals in internal organs. However, scarce information exists about the effects of metal exposure on their physiological status. Oxidative status markers are known to be altered after detoxification processes and immune responses. Here, we studied individuals of an insectivorous bat, *Myotis daubentonii*, from natural populations inhabiting close to a metal emission source and a less contaminated site for two consecutive summers. We quantify metal elements (As, Ca, Cd, Co, Cu, Mn, Pb, Ni, Se, Zn) from individual faecal pellets and measured antioxidant enzyme activities (GP, CAT, SOD, GSH:GSSG) from red blood cells. We also report biometrics, haematocrit and parasite prevalence. In general, metal concentrations in faeces of *M. daubentonii* reflected the exposure to ambient contamination. This was especially evident in the higher concentrations of Cd, Co, Cu and Ni close to a smelter compared to a place with less contaminant exposure. Year and site differences were also observed for most elements quantified. Calcium and zinc differed between males and females, while SOD and CAT correlated with principal components of six toxic metals, suggesting an effect of metal exposure on enzymatic activities when metals occurred at elevated concentrations.